July 1948 ET-259

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine

A SMALL FIELD DUSTER

George V. Johnson,
Division of Truck Crop and Garden Insect Investigations

A duster was constructed for treating individual tomato plants in field plots at Columbus, Ohio, in connection with experiments for the control of the tomato fruitworm (Heliothis armigera (Hbn.)). Weighed quantities of dust ranging from 2 to 7 gm. were used in the duster described here.

Description

A cutaway diagram of the duster is shown in figure 1. The dust chamber (A) was formed from the bulb part of a 50-ml. pipette. The constricted top part of the bulb was cut off. About an inch of the bottom stem was retained, and was bent and shaped to form a dust-discharge orifice (B) approximately 0.08 inch in diameter. The air tube (C) was made from a 7-inch length of 1/8-inch copper tubing. The outlet (D) of this tube was constricted to approximately 0.08 inch by sealing the end with solder and boring a hole through the seal.

The dust chamber and the air tube were placed in a protective housing made from a cylindrical piece of wood about 2½ inches in diameter and 6 inches long. A hole to fit the dust chamber was bored into the cylinder deep enough to sink the top of the dust chamber about 3/4 inch below the top of the wood cylinder. The top 3/4 inch of the cylinder was cut to make a funnel-shaped opening. The bottom was hollowed out roughly as indicated. A 3/16-inch hole for the air tube was bored in the wood cylinder so as to bring the air tube into proper alignment with the dust-discharge orifice (B).

The dust chamber was fastened in place with plastic cement around the top and bottom. The position of the tip of the air tube (D) to give the best dusting action was determined by trial. The air tube was fastened in place with plastic cement.

Operation

A 2-cylinder air compressor of the paint-sprayer type, powered by a small gasoline engine, supplied the air for dusting. An air line with a cut-off valve connected the compressor with the air tube of the duster. A weighed quantity of dust was placed in the dust chamber. When the air was

turned on, the air stream across the tip of the dust chamber delivered the dust from the chamber. This duster has been operated with the compressor set at pressures of 10 to 17 pounds per square inch.

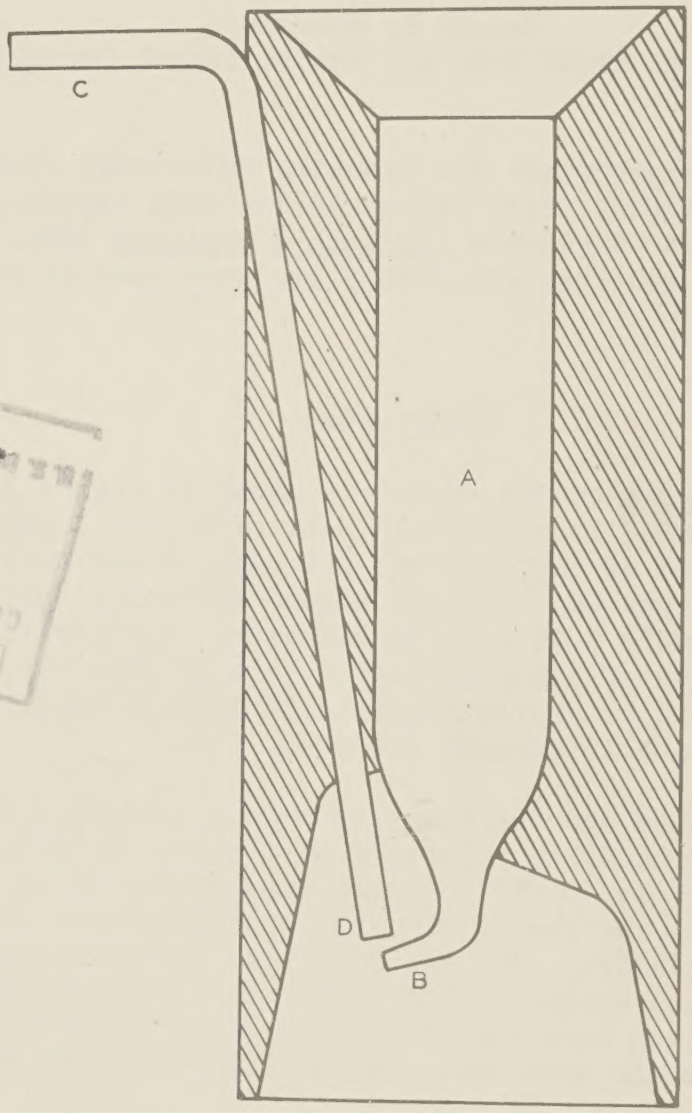

Figure 1.--Cutaway diagram of duster.